Complete Summary

GUIDELINE TITLE

Diagnosis and management of tickborne rickettsial diseases: Rocky Mountain spotted fever, ehrlichioses, and anaplasmosis - United States. A practical guide for physicians and other health-care and public health professionals.

BIBLIOGRAPHIC SOURCE(S)

Chapman AS, Bakken JS, Folk SM, Paddock CD, Bloch KC, Krusell A, Sexton DJ, Buckingham SC, Marshall GS, Storch GA, Dasch GA, McQuiston JH, Swerdlow DL, Dumler SJ, Nicholson WL, Walker DH, Eremeeva ME, Ohl CA. Diagnosis and management of tickborne rickettsial diseases: Rocky Mountain spotted fever, ehrlichioses, and anaplasmosis--United States: a practical guide for physicians and other health-care and public health professionals. MMWR Recomm Rep 2006 Mar 31;55(RR-4):1-27. [104 references] PubMed

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Tickborne rickettsial diseases (TBRD) including:

- Rocky Mountain spotted fever (RMSF)
- Human monocytotropic (or monocytic) ehrlichiosis (HME)
- Human granulocytotropic (or granulocytic) anaplasmosis (HGA, formerly known as human granulocytotropic ehrlichiosis or HGE)
- Ehrlichia ewingii infection

- Other emerging TBRD

GUIDELINE CATEGORY

Diagnosis
Management
Prevention
Risk Assessment

CLINICAL SPECIALTY

Emergency Medicine
Family Practice
Infectious Diseases
Internal Medicine
Pediatrics

INTENDED USERS

Advanced Practice Nurses
Emergency Medical Technicians/Paramedics
Health Care Providers
Nurses
Physician Assistants
Physicians
Public Health Departments

GUIDELINE OBJECTIVE(S)

- To provide primary care physicians and physician extenders with practical information to assist with the diagnosis and care of patients with tickborne rickettsial diseases (TBRD)
- To provide a framework for recognizing suggestive symptoms, considering likely alternative diagnoses, eliciting relevant history, requesting appropriate diagnostic tests, and initiating prompt, effective treatment

TARGET POPULATION

- Individuals with probable or confirmed tickborne rickettsial diseases (TBRD)
- Individuals at risk for TBRD

INTERVENTIONS AND PRACTICES CONSIDERED

Diagnosis and Management

1. Thorough clinical history eliciting recent tick bite or tick exposure, travel to endemic areas, or reports of tickborne rickettsial diseases (TBRD) among family members, coworkers or pets
2. Clinical assessment and laboratory diagnostic tests (signs and symptoms of TBRD, complete blood count, metabolic panel, peripheral blood smear, cerebrospinal fluid analysis)

3. Immediate antibiotic therapy
    - Doxycycline (first-line)
    - Chloramphenicol (alternative)
4. Prophylactic use of antibiotics after a tick bite (considered but not recommended)
5. Management of severe manifestations of TBRD
6. Confirmatory diagnostic tests
    - Blood smear microscopy
    - Serologic testing (indirect immunofluorescence antibody [IFA] assay)
    - Amplification of specific DNA by polymerase chain reaction (PCR)
    - Immunohistochemical staining of biopsied skin or autopsy tissues
    - Culture (rarely used for diagnosis)
7. Surveillance and reporting of TBRD

Prevention

1. Avoiding tick bites
2. Limiting exposure to tick habitats
3. Inspecting body for ticks
4. Removing ticks

MAJOR OUTCOMES CONSIDERED

- Epidemiology of tickborne rickettsial infection
- Utility of clinical assessment and laboratory tests in differential diagnosis
- Sensitivity and specificity of confirmatory diagnostic assays
- Effectiveness of antibiotic therapy
- Case fatality rate

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus (Committee)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

In October 2004, to address the need for a consolidated resource for the diagnosis and management of tickborne rickettsial diseases (TBRD), the Center for Disease Control and Prevention's (CDC's) Viral and Rickettsial Zoonoses Branch collaborated with 11 clinical and academic specialists of Rocky Mountain spotted fever (RMSF), human granulocytotropic (or granulocytic) anaplasmosis (HGA) and human monocytotropic (or monocytic) ehrlichiosis (HME). These external contributors were invited by CDC subject matter specialists to participate among clinicians and researchers in the field of TBRD, based on direct working interactions related to case consultation and recognized expertise from peer-reviewed publications. In December 2004, the framework of this report was developed by CDC's Viral and Rickettsial Zoonoses Branch, based on a summary of the peer-reviewed published reports on the epidemiology and clinical aspects of TBRD. External contributors further developed recommendations for the diagnosis and treatment of TBRD based on their clinical research and experience. All work group collaborators reviewed and provided input and approved the final content of this report.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

All work group collaborators reviewed and provided input and approved the final content of this report.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Table: Selected features of Rocky Mountain spotted fever,[1] human monocytotropic ehrlichiosis, human granulocytotropic anaplasmosis[2], and Ehrlichia ewingii infection -- United States[3]

Agent (disease)	Primary vector(s)	Approximate distribution[4]	Incubation period(days)	Common initial signs and symptoms	Common laboratory abnormalities	Ra
Rickettsia rickettsii (Rocky Mountain spotted fever)	Dermacentor variabilis (American dog tick), Dermacentor andersoni (Rocky Mountain wood tick), and Rhipicephalus sanguineus (brown dog tick) in AZ[5]	Widespread in the United States, especially South Atlantic and South Central states	2-14	Fever, nausea, vomiting, myalgia, anorexia, and headache	Thrombocytopenia, mild hyponatremia, and mildly elevated hepatic transaminase levels	Maculo rash approx 2-4 day fever o 50%-8 adults in child might i palms a soles
Ehrlichia chaffeensis (human monocytotropic ehrlichiosis)	Amblyomma americanum (lone star tick)	South and Mid-Atlantic, North/South Central United States, and isolated areas of New England	5-14	Fever, headache, malaise, and myalgia	Leukopenia, thromobocytopenia, and elevated serum transaminase levels	Rash in of adul approx 60% of childre
Anaplasma phagocytophilum (human granulocytotropic anaplasmosis)	Ixodes scapularis and Ixodes pacificus (blacklegged tick) in the United States	New England, North Central and Pacific states	5-21	Fever, headache, malaise, myalgia, and vomiting	Leukopenia, thrombocytopenia, elevated serum transaminase levels	Rare
Ehrlichia ewingii infection	Amblyomma americanum (lone star tick)	South Atlantic and South Central United States to isolated areas of New England	5-14	Fever, headache, myalgia, nausea, and vomiting	Leukopenia, thromobocytopenia, and elevated serum transaminase levels	Rare

[1] SOURCE: Walker DH, Raoult D. Rickettsia rickettsii and other spotted fever group rickettsiae (Rocky Mountain spotted fever and other spotted fevers). In: Mandell GL, Bennett JE, Dolin R, eds. Mandell, Douglas, and Bennett's principles and practice of infectious diseases. 6th ed. Philadelphia, PA: Churchill Livingstone; 2005:2287-95.

[2] SOURCE: Walker DH, Dumler JS. Ehrlichia chaffeensis (human monocytotropic ehrlichiosis), Anaplasma phagocytophilum (human granulocytotropic anaplasmosis) and other ehrlichiae. In: Mandell GL, Bennett JE, Dolin R, eds. Mandell, Douglas, and Bennett's principles and practice of infectious diseases. 6th ed. Philadelphia, PA: Churchill Livingstone; 2005:2310-8.

[3] Treatment for each of these diseases is the same: adults, doxycycline 100 mg orally (PO) or intravenously (IV) twice daily; and children, doxycycline 2.2 mg/kg administered PO or IV twice daily.

[4] Mountain: Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada. East South Central: Kentucky, Tennessee, Alabama, Mississippi. East North Central: Ohio, Indiana, Illinois, Michigan, Wisconsin. West South Central: Arkansas, Louisiana, Oklahoma, Texas. West North Central: Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas. Pacific: Washington, Oregon, California. New England: Massachusetts, Connecticut, Rhode Island, New Hampshire. South Atlantic: Delaware, Maryland, Virginia, District of Columbia, West Virginia, North Carolina, South Carolina, Georgia, Florida. Mid-Atlantic: New York, New Jersey, Pennsylvania.

[5] SOURCE: Demma LJ, Traeger MS, Nicholson WL, et al. Rocky Mountain spotted fever from an unexpected tick vector in Arizona. N Engl J Med 2005;353:587-94.

Table: Case definitions for Rocky Mountain spotted fever[1], human monocytotropic ehrlichiosis (HME), human granulocytotropic anaplasmosis (HGA), and unspecified ehrlichiosis[2]

Rocky Mountain spotted fever		Ehrlichiosis and anaplasmosis		
Clinical description	Tickborne illness characterized by acute onset of fever and possible headache, malaise, myalgia, and nausea/vomiting or neurologic signs. A macular or maculopapular rash is reported in the majority of patients and is frequently observed on the palms and soles.	Tickborne illness characterized by acute onset of fever, headache, myalgia, and possible malaise. Nausea, vomiting, or rash might be observed in certain cases. Clinical laboratory findings might include thrombocytopenia, leukopenia, and possibly elevated liver enzymes. Intracytoplasmic morulae might be visible in the leukocytes of certain patients.		
		HME	HGA	Unspecified ehrlichiosis
Laboratory criteria	Serologic evidence of 4-fold change in serum	Demonstration of 4-fold change in antibody titer	Demonstration of 4-fold change in antibody titer	Demonstration of 4-fold change in antibody titer

Rocky Mountain spotted fever		Ehrlichiosis and anaplasmosis		
	antibody titer against Rickettsia rickettsii antigens between paired serum samples, as determined by IFA[3] or ELISA[4]; or demonstration of R. rickettsii antigen in a clinical specimen by IHC[5] methods; or detection of R. rickettsii DNA in a clinical specimen by PCR assay; or isolation of R. rickettsii from a clinical specimen in cell culture.	to Ehrlichia chaffeensis antigen by IFA in paired serum samples; or positive PCR[6] assay and confirmation of E. chaffeensis DNA; or identification of morulae in leukocytes and a positive IFA titer to E. chaffeensis antigen; or immunostaining of E. chaffeensis antigen in a biopsy or autopsy sample; or culture of E. chaffeensis from a clinical specimen.	to Anaplasma phagocytophilum antigen by IFA in paired serum samples; or positive PCR assay and confirmation of A. phagocytophilum DNA; or identification of morulae in leukocytes, and a positive IFA titer to A. phagocytophilum antigen; or immunostaining of A. phagocytophilum antigen in a biopsy or autopsy sample; or culture of A. phagocytophilum from a clinical specimen.	to more than one Ehrlichia species in which a dominant reactivity cannot be established; or Identification of a species other than E. chaffeensis or A. phagocytophilum by PCR, immunostaining, or culture.
Case classification	Probable case: Identified in a person with a clinically compatible illness and	Probable case: Identified in a person with a clinically compatible illness with either a single positive IFA titer (based on cutoff titers established by the laboratory performing the test) or the visualization of morulae in leukocytes.		

Rocky Mountain spotted fever		Ehrlichiosis and anaplasmosis
	serologic evidence of antibody reactive with R. rickettsii in a single serum sample at a titer considered indicative of current or previous infection (cutoff titers are determined by individual laboratories).	
	Confirmed case: Identified in a person with a clinically compatible illness that is laboratory confirmed by a 4-fold change in serum antibody titer, as determined by IFA or ELISA or positive PCR or positive IHC, or isolation in culture.	

[1] SOURCE: CDC. Rocky Mountain spotted fever (Rickettsia rickettsii): 2004 case definition. Atlanta, GA: US Department of Health and Human Services, CDC, Epidemiology Program Office, Division of Public Health Surveillance and Informatics; 2004.

[2] SOURCE: CDC. Ehrlichiosis (HGE, HME, other or unspecified): 2000 case definition. Atlanta, GA: US Department of Health and Human Services. CDC, Epidemiology Program Office, Division of Public Health Surveillance and Informatics; 2000.

[3] Indirect immunofluorescence antibody

[4] Enzyme-linked immunosorbent assay

[5] Immunohistochemical

[6] Polymerase chain reaction

Epidemiology of Tickborne Rickettsial Diseases (TBRD)

The following is a summary of the salient epidemiologic features of TBRD:

- Occurrence is seasonal, with the majority of illness onset during warmer spring and summer months, but cases might develop throughout the year.
- Rocky Mountain spotted fever (RMSF) has been reported in all of the contiguous 48 states, except Vermont and Maine.
- RMSF and human monocytotropic (or monocytic) ehrlichiosis (HME) are most commonly reported in the southeastern and south central United States.
- Human granulocytotropic (or granulocytic) anaplasmosis (HGA) is reported most frequently in New England, the north central states, and in focal areas along the West Coast.

Pathogen Tropisms and Clinical Presentation

The following is a summary of salient features of pathogen tropisms:

- Rickettsia. rickettsii infects endothelial cells, causing vasculitis, which leads to rash and life-threatening damage to the brain, lungs, and other viscera.
- R. rickettsii is not evident in blood smears, and these bacteria and do not stain with the majority of conventional stains.
- Ehrlichia and Anaplasma species infect monocytes or granulocytes, respectively, and morulae might occasionally be observed on peripheral blood smears by using routine stains.

Clues from the Clinical History

The following is a summary of salient features of clues from the clinical history:

- A detailed history of recent recreational or occupational activities might reveal potential exposure to ticks.
- Exposure can occur in the patient's backyard or neighborhood.
- Familiarity with TBRD epidemiology will be helpful when querying patients regarding recent travel to endemic areas (domestic and international).
- Clustering of certain TBRD is well-recognized and has been reported among family members, coworkers, and other defined groups.

Clinical Assessment

The following is a summary of salient clinical assessment features:

- Early clinical presentations of HME, HGA, RMSF, and Ehrlichia ewingii infection include fever, headache, myalgia, and malaise and are difficult to distinguish from other infectious and noninfectious diseases.
- Patients with RMSF typically do not have a spotted or petechial rash when they initially seek medical care during the first 2 to 4 days of illness.
- A complete blood count (CBC), metabolic panel, and peripheral blood smear examination are helpful in developing both a differential diagnosis and treatment approach to TBRD.
- Cerebrospinal fluid (CSF) analysis might reveal neutrophilic or lymphocytic pleocytosis and elevated protein but might not reliably distinguish TBRD and meningococcal disease, necessitating empiric antibiotic therapy for both conditions when indicated.
- Leukopenia, thrombocytopenia, mild hyponatremia, and mildly elevated hepatic transaminase levels are common and particularly useful clinical features of TBRD, although the absence of these features does not exclude a diagnosis of TBRD.
- Infrequent features of TBRD include severe abdominal pain and meningoencephalitis.
- Rash is observed frequently in RMSF, occasionally in HME, and rarely in HGA or E. ewingii infection

Treatment and Management

The following is a summary of salient features of treatment and management:

- Clinical history, symptoms, and physical and laboratory findings should guide the clinician's approach to patient management and treatment.
- Not all patients with TBRD will require hospitalization.
- Clinicians may consider a wait and watch approach for 24 to 48 hours for patients early in the course of illness and who have nonsupporting history, nonspecific clinical signs, and normal laboratory findings.
- Doxycycline is the drug of choice for the treatment of presumptive or confirmed TBRD in both adults and children.
- Limited courses of tetracycline-class antibiotics (e.g., doxycycline) do not pose a substantial threat of tooth staining in children.
- Tetracyclines typically are contraindicated for use during pregnancy but might be warranted in life-threatening situations where clinical suspicion of TBRD is high.
- Delay in treatment can lead to severe disease and fatal outcome of TBRD.
- In evaluating for TBRD, when early invasive meningococcal infection cannot be ruled out, providing treatment for both conditions by adding an antimicrobial that has activity against N. meningitidis is appropriate.
- Prophylactic use of antibiotics after a tick bite is not recommended.

Considerations for Management of Patients with Severe Manifestations of TBRD

The following is a summary of salient features of severe manifestations:

- TBRD can be life-threatening.
- Severe manifestations of TBRD include prolonged fever, renal failure, myocarditis, meningoencephalitis, hypotension, acute respiratory distress syndrome, and multiple organ failure.

Confirmatory Diagnostic Tests

The following is a summary of salient features of diagnostic testing:

- Blood smear microscopy might reveal presence of morulae in infected leukocytes, which is highly suggestive of HGA or, less commonly, HME.
- Blood smears are not useful to diagnose RMSF.
- Examination of paired serum samples obtained 2 to 3 weeks apart that demonstrate a rise in antibody titer is the most appropriate approach to confirm TBRD.
- Patients usually do not have diagnostic serum antibody titers during the first week of illness; therefore, an inability to detect antibodies (IgG or IgM) in acute-phase serum does not exclude TBRD.
- Immunohistochemistry of a biopsied skin lesion or autopsy tissues is useful for RMSF diagnosis in patients for whom diagnostic titers of antibodies have not yet developed.
- Whole blood specimens might be useful for a polymerase chain reaction (PCR) confirmation of HME, HGA, and E. ewingii infection; however, a negative result does not rule out the diagnosis.

Surveillance and Reporting

The following is a summary of salient features of surveillance and reporting:

- RMSF, HME, HGA, and other ehrlichioses are reportable diseases in the United States.
- Physicians who identify a potential case of TBRD should notify the local health department, which can assist with obtaining diagnostic testing to confirm the diagnosis.
- Surveillance and reporting of TBRD are key components of public health education and disease prevention efforts.

Prevention

The following is a summary of salient features of prevention:

- Avoid tick bites, which is key to the prevention of TBRD.
- Limit exposure to tick habitats, including grassy and wooded areas.
- Inspect the body carefully for ticks after being in a tick habitat.
- Remove attached ticks immediately by grasping with tweezers close to skin and pulling gently with steady pressure.

Conclusion

TBRD continue to cause severe illness and death in otherwise healthy adults and children, despite the availability of low cost, effective antimicrobial therapy. The greatest challenge to clinicians is the difficult diagnostic dilemma posed by these infections early in their clinical course when antibiotic therapy is most effective.

Early clinical presentations of HME, HGA, RMSF, and E. ewingii infection include fever, headache, myalgia, and malaise and are difficult to distinguish from other infectious and noninfectious diseases. Rash is observed frequently in RMSF, occasionally in HME, and rarely in HGA. TBRD tend to occur seasonally, with the majority of cases occurring during the warmer spring and summer months. However, cases might develop year-round. A detailed history of recent recreational or occupational activities might reveal potential exposure to ticks, although the absence of a history of a recent tick bite should not dissuade clinicians from considering a diagnosis of TBRD.

TBRD can be life-threatening. Severe manifestations of TBRD include prolonged fever, renal failure, myocarditis, meningoencephalitis, hypotension, acute respiratory distress syndrome, and multiple organ failure. Patients usually do not have diagnostic serum antibody levels during the first week of illness; therefore, an inability to detect antibodies (IgG or IgM) in acute-phase serum does not exclude TBRD. Health-care providers should not delay treatment while waiting for a diagnosis; rather, they should empirically provide treatment if they suspect TBRD. Doxycycline is the drug of choice for the treatment of presumptive or confirmed TBRD in both adults and children.

Examination of paired serum samples obtained during acute illness and 2 to 3 weeks later that demonstrate a rise in antibody titer is the most appropriate approach to confirm TBRD. Physicians who identify a potential case of TBRD should notify the local health department, which can assist with obtaining diagnostic testing to confirm the diagnosis.

No licensed vaccines for TBRD are available. Avoiding tick bites and promptly removing attached ticks remain the best disease prevention strategies.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of evidence supporting the recommendations is not specifically stated.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Improved recognition of common epidemiologic situations and clinical manifestations of tickborne rickettsial diseases (TBRD)
- Application of appropriate history and diagnostic tests for TBRD
- Prevention of severe morbidity and death by early and empiric antibiotic therapy
- Improved surveillance and reporting of TBRD

POTENTIAL HARMS

- The propensity of tetracyclines to bind calcium can lead to darkening of the teeth if the antibiotic is ingested during the period of tooth crown formation. More recent studies in 1971 and 1998, however, have demonstrated that although multiple exposures to tetracycline increase the risk for tooth staining, limited use of this drug in children during the first 6 to 7 years of life has a negligible effect on the color of permanent incisors. Beyond ages 6 to 7 years, the risk for tetracycline staining is of minimal consequence because visible tooth formation is complete.
- Chloramphenicol is associated with various side effects and might require monitoring of blood indices. Chloramphenicol is no longer available in the oral form in the United States. Moreover, epidemiologic studies in which the Centers for Disease Control and Prevention (CDC) case report data have been used suggested that patients with Rocky Mountain spotted fever treated with chloramphenicol have a higher risk of dying than persons who received a tetracycline.
- Whereas chloramphenicol is typically the preferred treatment for Rocky Mountain spotted fever during pregnancy, care must be used when administering chloramphenicol late during the third trimester of pregnancy because of risks associated with grey baby syndrome.

CONTRAINDICATIONS

CONTRAINDICATIONS

Tetracyclines are generally contraindicated for use in pregnant women because of risks associated with malformation of teeth and bones in the fetus and hepatotoxicity and pancreatitis in the mother. However, tetracycline has been used successfully to treat human monocytotropic (or monocytic) ehrlichiosis in pregnant women, and the use of tetracyclines might be warranted during pregnancy in life-threatening situations where clinical suspicion of tickeborne rickettsial diseases is high.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Chart Documentation/Checklists/Forms
Staff Training/Competency Material

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Staying Healthy

IOM DOMAIN

Effectiveness
Timeliness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Chapman AS, Bakken JS, Folk SM, Paddock CD, Bloch KC, Krusell A, Sexton DJ, Buckingham SC, Marshall GS, Storch GA, Dasch GA, McQuiston JH, Swerdlow DL, Dumler SJ, Nicholson WL, Walker DH, Eremeeva ME, Ohl CA. Diagnosis and management of tickborne rickettsial diseases: Rocky Mountain spotted fever, ehrlichioses, and anaplasmosis--United States: a practical guide for physicians and other health-care and public health professionals. MMWR Recomm Rep 2006 Mar 31;55(RR-4):1-27. [104 references] PubMed

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2006 Mar 31

GUIDELINE DEVELOPER(S)

Centers for Disease Control and Prevention - Federal Government Agency [U.S.]

SOURCE(S) OF FUNDING

United States Government

GUIDELINE COMMITTEE

Tickborne Rickettsial Diseases Working Group

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

The Centers for Disease Control and Prevention (CDC), their planners, and their content experts wish to disclose they have no financial interests or other relationships with the manufacturers of commercial products, suppliers of commercial services, or commercial supporters. Presentations will not include any discussion of the unlabeled use of a product or a product under investigational use.

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available from the Centers for Disease Control and Prevention (CDC) Web site:

- HTML Format
- Portable Document Format (PDF)

Print copies: Available from the Centers for Disease Control and Prevention, MMWR, Atlanta, GA 30333. Additional copies can be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-9325; (202) 783-3238.

AVAILABILITY OF COMPANION DOCUMENTS

A case report form (for tick-borne rickettsial disease [TBRD]) and a continuing education activity are available in the appendix of the original guideline document.

PATIENT RESOURCES

None available

NGC STATUS

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